

Rosebrugh (A. M.)

ON SOME PRACTICAL POINTS

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TREATMENT OF THOSE FORMS OF EYE DISEASE OF MOST FREQUENT OCCURRENCE IN GENERAL PRACTICE.

*With the Compliments of
the Author.*

BY A. M. ROSEBRUGH, M.D.,

SURGEON TO THE TORONTO EYE AND EAR INFIRMARY.



Read before the Canadian Medical Association, Halifax, N. S., Aug. 4, 1875.



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I. CATARRHAL CONJUNCTIVITIS.—In preparing a paper to be read before this Association, it has been my endeavour to write a practical paper that would be interesting both to those of extensive and to those of limited experience in ophthalmic medicine and surgery. I have purposely omitted all unnecessary technicality, and avoided all pathological points not absolutely necessary for the purposes of this communication. I wish to direct your attention to “some practical points in the treatment of those forms of eye disease of most frequent occurrence in general practice,” namely, certain diseases of the Conjunctiva and Cornea.

Of simple Conjunctivitis, I would merely say, in passing, that it is nothing more than a passive congestion of the ocular conjunctiva, with no cedema, and with very little discharge. It does not usually run a course of more than one or two weeks and readily yields to a simple astringent, such as that of the solution of the sulphate of zinc, of the strength of from one to two grains to the ounce of distilled water, applied three or four times a-day. In purulent conjunctivitis we have the other extreme, the inflammation being most intense, and frequently resulting in total sloughing of the cornea in a few days. The

characteristic symptoms are œdema and elongation of the upper eyelid, with copious purulent discharge from the conjunctival surface. The sub-conjunctival tissue is intensely infiltrated, and the conjunctiva raised into a hard ring around the cornea, giving rise to the condition called *chemosis*. This form of ophthalmia is very contagious; but fortunately, in Canada it is as rare as it is destructive. Catarrhal conjunctivitis occupies a position between these extremes, and is the form of ophthalmia to which I wish now to specially direct your attention. At the Toronto Eye and Ear Infirmary, about four per cent. of the eye cases are registered as cases of catarrhal conjunctivitis; but this percentage does not accurately represent the relative frequency with which these cases occur in Western Canada, as patients with acute inflammation of the conjunctiva are seldom sent to be treated as hospital patients. Catarrhal conjunctivitis is characterized by congestion and an œdematous condition of the ocular conjunctiva, with muco-purulent discharge. There is little infiltration of the sub-conjunctival tissue, and the conjunctiva, though raised and deeply colored, remains soft and movable. The upper eyelid does not become elongated nor the integument œdematous, and the inflammation of the cornea is very rarely suppurative. It is contagious in the acute stage only, and then by direct contact of the discharge with the conjunctival surface. Usually in six or eight days after the affection begins in one eye, the other becomes affected, unless special precautions are taken to prevent the discharge passing from one eye to the other. I find the disease more prevalent among farm labourers and shanty men, where very frequently one wash-basin, with one towel, is made to do duty for a number of persons. So far as these cases have come under my observation from the Province of Ontario, and the neighbouring States of New York and Michigan, I find that, not unlike the exanthematous diseases, they run a regular course, which is usually from two to four weeks of acute inflammation; then the œdema and vascularity of the ocular conjunctiva subside, and the patients affirm and believe that their eyes are perfectly cured; but upon everting the eyelids, the palpebral conjunctiva will be found to be velvety and the papillæ already

somewhat hypertrophied. In many of the slight cases, I doubt not, that this hypertrophied condition recedes spontaneously; but in other cases, and I think the larger number, the disease, if inefficiently treated, extends to the sub-conjunctival tissue, and the papillæ become very much elongated, giving rise to the condition erroneously called "granular lids." This swollen and roughened condition of the palpebral conjunctiva is a constant source of irritation, and in many cases is the direct cause of vascular and ulcerative diseases of the cornea.

Catarrhal inflammation of the conjunctiva is an innocent disease that seldom, in the acute stage, results in any serious trouble to either cornea or ocular conjunctiva; but the so-called "granular lids," in its effect on the cornea, undoubtedly leads to more cases of impaired vision and blindness than any other disease of the eye. The subjective symptoms in this affection are so misleading, that the patient is clamorous for treatment when comparatively little local treatment is required, and on the contrary, can with difficulty be induced to continue treatment afterwards, when it is absolutely necessary to prevent hypertrophies of the palpebral conjunctiva and the diseases that result therefrom.

In the treatment of catarrhal conjunctivitis, I do little more the first week than order the eye to be bathed frequently with warm water, and direct simple cerate of fresh lard to be applied to the edge of the eyelids at bed-time. A solution of atropia-sulph. (grs. ij—3i) applied occasionally to the conjunctiva will show, by its effect on the shape of the pupil, whether the iris is involved or not. This is a point of great practical importance, and especially so to young practitioners, who have little experience in diagnosing inflammation of the iris. In the second week, the use of local applications should be begun, and I do not know which of two remedies to recommend most highly, namely, weak solutions of nitrate of silver, or the red oxide of mercury plasma. I have used the two remedies side by side, that is, one in the right eye, the other in the left, and have had about equally satisfactory results. The plasma of the red oxide of mercury is used of the uniform strength of eight grains to the ounce of

the plasma; but in using the nitrate of silver, a solution of three grains to the ounce of distilled water is advised, and the strength gradually increased to fifteen grains to the ounce, during three weeks of treatment. The three-grain solution may be dropped into the eye by a nurse or friend three or four times a-day, and the eyes bathed afterwards in warm water. After the first week of treatment, when a stronger solution is being used, the eyelids should be everted, and the remedy applied to the palpebral conjunctiva with a camel's hair brush, and in a few seconds any excess of the solution washed off with warm water, before the lid is replaced. The stronger solutions are applied in this manner once a-day, and in addition, the three-grain solution may be still used two or three times a-day, while the ocular conjunctiva remains congested and cedematous. The treatment is continued until both the ocular and palpebral conjunctiva have resumed the healthy condition. When the plasma of the red oxide of mercury is used, it is applied to the everted palpebral conjunctiva twice a-day (and not washed off), and no other local application used, with the exception of the occasional use of atropia solution as before mentioned, and fresh lard to the edge of the eyelids at bed-time.

II. "GRANULAR LIDS."—With the exception of phlyctenular diseases of the cornea, there is no affection of the eye more prevalent in Ontario than that of so-called "granular lids." Out of a total of 1957 eye cases tabulated at the Toronto Eye and Ear Infirmary, 193, or about ten per cent., were recorded as cases of trachoma or "granular lids." In my private practice, the percentage is a little less than ten per cent.

The disease is a hypertrophied condition of the papilla and sub-conjunctival tissue of the palpebral conjunctiva, and is the sequel of, and probably caused only by catarrhal conjunctivitis. Cases of "sago-grain," or follicular granulations, said to be the most common cause of granular ophthalmia among the military and in the crowded poor-houses of the Old World, have not come under my observation. To avoid circumlocution, I will continue the use of the term "granular lids,"—it is at least

suggestive of the appearance, if not of the pathological condition of the palpebral conjunctiva. In order to treat these cases successfully, I find it of the utmost importance to secure, at the outset, perfect control over the patient. I never take charge of a case unless it is distinctly understood that the patient must not only be regular in his daily or semi-daily attendance, but that he must continue the attendance four, eight, or twelve weeks, according to the length of time that the treatment will probably require. In cases where the surgeon fails to secure this control over the patient, the treatment usually ends in disappointment to both.

The local treatment is that of *stimulation*. Absorption is most active when the palpebral conjunctiva is kept in a constant state of hyperæmia. We stimulate without cauterizing, and take care not to irritate the sensitive ocular conjunctiva. Moist heat, applied externally to the eyelids, is a very good method of indirectly stimulating the palpebral conjunctiva. I have never been able to carry out the experiment, but I doubt not that some of these cases might be cured by the stimulus of hot water alone. In one case there was also a penetrating ulcer of the cornea, the hot water treatment was used exclusively for two weeks, at the end of which time the ulcer was nearly healed, and the condition of the palpebral conjunctiva very much improved. We endeavour to keep up a pretty uniform condition of hyperæmia of the palpebral, without irritating or stimulating the ocular conjunctiva. The lid should be well everted, morning and evening, and a stimulating (not a cauterizing) application made to the palpebral conjunctiva. The exposed palpebral conjunctiva is immediately bathed with warm water, using either a soft brush or a small syringe. This bathing removes any excess of the stimulating application, and thus saves the cornea and ocular conjunctiva from irritation. Between the applications, the eyelids are bathed once or twice with warm, almost hot, water. In cases immediately following the catarrhal inflammation, the treatment is commenced with a ten-grain solution of nitrate of silver, and the strength is gradually increased to twenty grains. In chronic cases, where the lid is thick, and the "granulations" prominent,

and where the patient is in robust health, with no phlyctenular or ulcerative inflammation of the cornea, either a solution of nitrate of silver (thirty grains to the ounce) may be applied, the solid sulphate of copper, or the mitigated stick of nitrate of silver and nitrate of potash. In cases, however, either recent or chronic, where there is present, or where there is a tendency to phlyctenular or ulcerative inflammation of the cornea, the nitrate of silver or sulphate of copper is inadmissible. Again and again have I seen cases put back for weeks by an attack of phlyctenular keratitis, evidently caused by the use of the "blue stone" or nitrate of silver. In these cases, the plasma of the red oxide of mercury, of the strength of gr. j— $\bar{3}$ j, may be applied morning and evening, without, however, brushing or syringing with water, the everted lid being returned with the oxide adhering to the palpebral conjunctiva. The eyelids are bathed occasionally, during the interval, with very warm water. The application of the red oxide is not so stimulating as the sulphate of copper or nitrate of silver, and consequently the treatment extends over a longer period; but in my experience, there is no local application that is so well adapted to the corneal complications, and none that will more certainly prevent their recurrence. Of course the general condition of the patient must not be neglected. A generous diet should be allowed, and when necessary, tonics prescribed. The local treatment is continued until the palpebral conjunctiva is restored to its wonted healthy appearance, and the fibrous structure of the sub-conjunctival tissue distinctly seen beneath.

I have endeavoured to give an outline of the general plan of treatment pursued with satisfactory results for the last fifteen years. The most chronic cases usually recover in from eight to twelve weeks; and in recent cases the treatment does not usually last more than three or four weeks. Any phlyctenular disease of the cornea present at the commencement, invariably disappears during the treatment, and relapses seldom or never occur.

Whether the same satisfactory results with the same treatment could be obtained anywhere except in the salubrious climate of the Province of Ontario, I am not prepared to state.

III. PHLYCTENULAR OPHTHALMIA.—During the last fifteen years, fully 1,000 cases of phlyctenular ophthalmia have been either directly or indirectly under my treatment, and as the results, upon the whole, have been most satisfactory, I trust that an outline of the treatment pursued will prove interesting and suggestive, both to the general practitioner and specialist.

The frequency with which these cases occur in practice may be inferred from the fact, that at the Toronto Eye and Ear Infirmary, out of a total of 1,957 eye cases, the large number of 315, or over 16 per cent., were cases of phlyctenular inflammation of the conjunctiva or cornea. Among children, this percentage of phlyctenular disease is much higher; of all the children in attendance at the Infirmary for eye disease, about 35 per cent. were suffering from some form of phlyctenular ophthalmia. Out of a total of 330 cases of eye disease among children under fifteen years of age, 118 were cases of phlyctenular ophthalmia. And of all cases of conjunctival and corneal disease among children, probably not less than four-fifths are of a phlyctenular character.

This disease has been called pustular and scrofulous ophthalmia. The prominent symptoms are photophobia and lachrymation; the former is frequently excessive, and the latter is usually profuse. In children, there is also in many cases excoriation or eczema of the integument of the lower eyelid and face, and the nasal mucous membrane is frequently affected also. With regard to photophobia, my experience is that it is associated almost exclusively with irritation of the conjunctiva or cornea, and never with disease of the retina or choroid. I make this remark in passing, as I not infrequently hear an opposite opinion expressed by some of the best physicians. Photophobia and lachrymation may be caused by irritation arising from mechanical and chemical injuries, or by the presence of inverted ciliæ or other foreign bodies; but in all other cases these symptoms are caused, almost exclusively, by phlyctenular disease.

In the general treatment of phlyctenular ophthalmia, it is not necessary at the outset to make any distinction between phlyctenular conjunctivitis and phlyctenular keratitis. The

indications are, to allay local irritation and to build up the constitution. Phlyctenular keratitis is of course the more serious form of the disease, both on account of the tendency to deep ulceration of the cornea, and also on account of the tendency of the iris to become involved. Phlyctenules on the cornea will result in opacities more or less dense, according to the depth of the ulceration; and inflammation of the iris may result in occlusion of the pupil.

In treating children with phlyctenular disease, it is frequently necessary at the outset to administer chloroform. While under its influence, the eyes can be thoroughly examined and the local remedy efficiently applied; moreover, the spasm of the orbicularis (blepharospasm) and the photophobia are often decidedly diminished after the anæsthetic.

The best local treatment in the case of young children, is to keep the eye constantly under the influence of atropine. The four-grain solution is applied twice a-day, the excessive watery secretion being first removed, to prevent the dilution of the atropine solution. Excoriation of the integument of the eyelids and cheek can be prevented to a great extent, by absorbing the excessive watery discharge from the eyes with pads of lint bandaged over the eyeballs. Bandaging, however, should be resorted to in those cases only where the lachrymation is unusually excessive, and abandoned as soon as practicable, for the photophobia does not diminish while the eyes are kept secluded from the light. Any accompanying eczema or ulceration of the nasal mucous membrane may be treated with the local application of the nitrate of mercury ointment, or the plasma of the red oxide. Children under five years of age should be put on a milk diet, combined either with stale bread or well cooked oatmeal porridge. The less the deviation from this wholesome diet the better; if the milk is rich in cream, the administration of cod-liver oil is rendered less necessary. A tonic course of treatment is invariably indicated, and there is probably no preparation better adapted to these cases than that of the syrup of the iodide of iron. The sleeping apartments and playrooms should be made as healthy as possible; and when the weather is favourable, the

patients should be properly clad and taken into the open air. As soon as practicable, the eyes should be exposed to the light; toleration of light increases the more they can be used.

In phlyctenular, as well as in interstitial inflammation of the cornea, inflammation of the iris sometimes occurs, and frequently escapes notice; this should be anticipated by appropriate treatment. In the local treatment of phlyctenular ophthalmia, the solution of atropine, applied two or three times a-day, will allay the irritation of the conjunctival and corneal nerves, and, when the iris is not involved, keep the pupil dilated; but in cases where we are unable to ascertain the condition of the iris, the midriatic should be applied more frequently. Where any irregularity in the shape of the pupil is seen, the four grain solution of the neutral sulphate should be applied six or eight times a-day, until the pupil becomes widely dilated and free from adhesions. Of course, in very young children, the solution cannot be applied so frequently, on account of its toxic effect.*

Since writing the above, a little girl has been brought to me, who had recovered from an attack of phlyctenular keratitis; but an accompanying iritis had been overlooked, and plastic effusion had bound down the iris behind a leucomatous central opacity of the cornea. If atropine, instead of nitrate of silver, had been used, adhesions of the iris would have been prevented, and perhaps the phlyctenular disease cured, before ulceration of the cornea had taken place.

In adults, the photophobia is seldom excessive; in mild cases it is entirely absent. It is this milder form of phlyctenular inflammation that is the great stumbling-block to many general practitioners. Phlyctenular conjunctivitis is sometimes mistaken for that most rare disease, *sclerotitis*, and the patient put on iodide of potassium and colchicum. It is treated, by some, as catarrhal conjunctivitis, and by others, as "chronic ophthalmia." I have frequently seen cases of *recognized* phlyctenular keratitis under the influence of mercury; the physician evidently believing such a course of treatment to be as appro-

* The neutral sulphate of atropine is soluble without the addition of acid, and this solution does not irritate the eye. No alcohol should be added.

priate and necessary for opacity of the cornea, as for plastic effusion in the iris. This treatment is not indicated, and it depresses, and perhaps permanently injures, a constitution that requires to be invigorated.

In the local treatment of phlyctenular inflammation, either of the conjunctiva or cornea, in adults, the plasma of the red oxide of mercury may truly be said to be a specific. I have used this remedy for nearly fifteen years, and I do not remember a single case that did not readily yield to this local treatment; and I cannot now recall more than four cases where a relapse occurred during the treatment. In one case the relapse followed the operation of canthoplasty, and in another,—iridectomy; the other cases were Infirmary patients. In ordinary cases, the treatment does not usually last more than three or four weeks; in slight cases, not more than one or two weeks. Except in these cases of relapse, the worst cases are usually cured in six or eight weeks. Even in cases complicated with "granular lids," the treatment does not usually extend beyond two months. After the patient is discharged, he is directed to continue the use of the red oxide for two or three weeks longer.* In cases where the photophobia is excessive, the atropine solution is applied two or three times a-day; and in cases where the ulcers of the cornea are not healing, and especially where they show a tendency to penetrate, the eyes are bathed two or three times a-day, for fifteen minutes at a time, with water as hot as can be borne. This is a most valuable remedy; and in the only case of phlyctenular keratitis in which I gave it an exclusive trial, a cure was effected in three weeks.

The mercurial plasma is applied twice a-day, as follows. Instead of applying it simply behind the lower eyelid, as is done by some practitioners, the eyelashes of the upper eyelid are held by the thumb and finger of the left hand, and the lid drawn forward; a small quantity of the plasma is now pushed up

* The red oxide is also used in the case of children, when there are leucomatous opacities remaining on the cornea, after the diminution or disappearance of the photophobia. These opacities, if not the result of deep ulcers, will, in most cases, completely disappear, if, after the subsidence of the phlyctenular inflammation, the case be followed up perseveringly with the semi-daily use of this remedy.

under the lid with a camel's-hair brush. Before the brush is withdrawn, the lid is pressed down, so as to retain the plasma; and on the removal of the brush, the oxide is well diffused over the eye by rubbing the eyelid over the eye. The treatment, in any case, should be commenced with the least quantity that will adhere to the end of the brush, and the quantity increased as it is tolerated. In cases of ulceration, where the patient can keep the eye steady, I apply the plasma directly to the affected part, and allow it to remain a few seconds, or so long as the eye can be kept open. Where the case is complicated with "granular lids," the oxide is applied to the everted palpebral conjunctiva and allowed to remain about half a minute before the lid is closed.

The strength generally used is one grain to the drachm; but in some cases where the patient has been under treatment for several weeks, a preparation of double that strength (two grains to the drachm)* is frequently well borne, and the case improves more rapidly.

The plasma of glycerine and starch is preferable to the ointment. It does not become rancid, and, being soluble in the lachrymal secretion, is more readily diffused over the conjunctival surface.

I am aware that others, including some of my own professional friends, who, apparently, have given the plasma of the red oxide a fair trial, are not able to report the same satisfactory results. This want of success can be explained partly by the fact of the want of care in its preparation, and partly from want of faith in its efficacy. There are cases, where, at the first, the eye is rendered more irritable by the treatment; here it would seem to be contra-indicated, and a strong faith in its ultimate efficacy is necessary in order to carry out the treatment perseveringly; moreover, it is possible that these cases of phlyctenular disease, as well as those of "granular lids," respond to treatment more readily in Western Canada than elsewhere.

* After applying the stronger preparation, however, the eye should be examined in about ten minutes, and any particles of the oxide lodged on the palpebral conjunctiva removed, otherwise ulceration of the membrane may occur.

In the city of New York, relapses occur in a large percentage of these cases, to prevent which the operation of canthoplasty is frequently performed. In some Infirmary patients, this operation has been done with benefit; but I have never had occasion to perform the operation in a single case in private practice, and am of opinion that it will be less frequently needed, as the merits of the treatment with the oxide of mercury are better appreciated.



Dr. Pagenstecher, of Wiesbaden, recommends the yellow amorphous oxide of mercury, in these cases, in preference to the red precipitate, on the ground that it is less irritating, and adapted to a larger class of cases. It is true that, in the preparation of the yellow oxide, it is precipitated in a state of the finest possible division; whereas, the red oxide consists of crystals, which are found triturated to different degrees of fineness in different shops. An ointment or plasma made with the former should therefore be a more reliable preparation than that of the latter (as it is usually prepared), and we might expect the ointment of the yellow oxide to be more uniform in its effects; but when the red oxide is properly triturated, and not used stronger than from eight to sixteen grains to the ounce, it does not usually cause much irritation,—the reaction usually passing away in ten or fifteen minutes.

Pagenstecher uses an ointment as strong as from thirty to sixty grains to the ounce, but I have never used it stronger than eight to sixteen grains to the ounce. One of my colleagues at the Eye Infirmary has used the stronger preparations of the yellow oxide, but soon abandoned it, as he found its action altogether too energetic. In the trials made with the weaker preparations, the results were not satisfactory, and the yellow oxide was found to have the disadvantage of being more inclined to collect in masses behind the upper eyelid.

An ointment made of the yellow oxide is undoubtedly preferable to one made with the ordinary red precipitate of the shops; but when the latter is properly triturated and thoroughly mixed with the glycerine plasma of proper consistence, it seems to leave nothing to be desired as an ophthalmic ointment.

Unfortunately, it is very difficult to procure a reliable preparation of the plasma of the red oxide of mercury, and one carelessly prepared is worse than useless. The apothecary objects to the trouble and length of time involved in its preparation, unless it is ordered in large quantities. For many years, the only reliable preparation that I could obtain was that of the firm of Moore & Brierly, Hamilton; but of late, Mr. H. J. Rose, of Toronto, has been supplying the preparation used both at the Eye Infirmary and in my private practice. Mr. Rose's formula is as follows:

"To make simple plasma or *Glycerinum Amyli B.P.*, take 1 oz. starch and 8 fluid oz. pure glycerine (I find corn starch to make the best product, though it seems to require a greater degree of heat), rub the starch with an ounce of distilled water till quite blended, then add the glycerine and apply heat, gradually increased, till a thick jelly is produced. The preparation must be constantly and thoroughly stirred while making, and if an appearance of granular lumps is shown, squeeze the product before it is cold through cheese-cloth, or doubled muslin, previously well washed to remove any loose fibres.

"To make the mercurial plasma, it is necessary to have a perfectly smooth and even-surfaced mortar and pestle, in order to obtain the oxide in an impalpable powder. While triturating, keep it moist by the addition of rectified spirit from time to time. Care is also required to keep the powder, which may adhere to the pestle, scraped off very frequently. When thoroughly triturated, the simple plasma is added in the desired proportion, and mixed thoroughly.

"The efficiency of the trituration may be best tested by rubbing a few grains of the plasma on a piece of fine white paper. On holding this up to the light, there should be no appearance whatever of any specks."

